

STOWABLE SINK FOR A VEHICLE

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to accessories for recreational vehicles, and in particular, to a stowable sink and attachments for use on the outside of a recreational vehicle.

[0002] Various types of vehicles are used and sold for recreational purposes and commercial purposes. When referred to herein, recreational vehicles or commercial vehicles shall refer to motor homes, travel trailers, campers and the like, as well as water craft, such as pleasure boats and pontoons. For example, a typical recreational vehicle is shown in U.S. Patent 5,800,002, which is a motor driven style motor home having an interior living area defined by outer walls, including side walls along both sides. Recreational vehicles (RV's) and marine craft carry a supply of fresh water for the convenience of the vehicle occupants while using the vehicle. In addition to internal uses, the user may also require fresh water outside the vehicle for such activities as washing or rinsing the vehicle exterior or washing or rinsing bicycles, scooters or trailered off-road vehicles such as all-terrain vehicles (ATV's) or motorcycles and the like. Depending on the activity being engaged in, the user himself or herself may want to wash his or her hands or rinse off gear, apparel, tools or equipment before re-entering the vehicle. In addition, trailered boats and watercraft benefit from a fresh water rinse after use.

[0003] Typically the user must locate a source of fresh water which often requires that the user drive or trailer the equipment or accessory to a location providing fresh water. In addition to being inconvenient, this allows dirt, foreign matter, or contaminants to dry or otherwise set on the items leaving undesirable deposits that become harder to remove at a later time. This can be particularly troublesome when exposure to salt water or corrosive materials is involved or where immediate fresh water flushing of the accessory after use is recommended.

[0004] Accordingly, a need exists for an apparatus that allows the user convenient access to a sink and the on board or other fresh water supply while outside the vehicle.

SUMMARY OF THE INVENTION

[0005] The present invention provides a sink assembly for use on a vehicle. In one embodiment, the sink assembly includes a mounting frame for mounting the sink assembly to the vehicle, wherein the mounting frame has an opening. The sink assembly also includes a door that is movable relative to the mounting frame and a sink top connected to the door. The sink top has a sink bowl with a drain, and the sink top is movable between a stowed position when not in use or when the vehicle is traveling to an operational position for use of the sink assembly. The sink assembly also includes at least one attachable plumbing apparatus that is connectable to a fluid source.

[0006] The sink assembly may further include a storage container for storing the plumbing apparatus when not in use or when the sink top is in the stowed position. The plumbing apparatus may include at least one of a faucet or a hose assembly. The sink assembly may also include a fluid inlet line that has a fitting attached and is connectable to the plumbing apparatus. At least a portion of the fluid inlet line may be located within the storage container, and the fluid inlet line may extend through an aperture in a bottom surface of the storage container toward the sink top.

[0007] The sink assembly in one embodiment further includes a valve coupled to the fitting of the fluid inlet line. The valve may be operable between a first state enabling fluid flow and a second state inhibiting fluid flow. In one embodiment, the valve is a quick connect coupling and stopper valve. The plumbing apparatus may have a fitting connectable to the quick connect coupling.

[0008] The door may be attached to the mounting frame with a hinged connection. The hinged connection may be at a lower end of the frame. An embodiment of the invention is also provided wherein at least a portion of the sink top moves through the opening in the mounting frame as the sink top moves between the stowed position and the operational position.

[0009] In another embodiment of the invention, a sink assembly for use on a vehicle is provided that includes a mounting frame for mounting the sink assembly to the vehicle. A sink top is mounted to be movable relative to the frame between a stowed position for when the sink assembly is not in use or when the vehicle is traveling and an operational position for use of the sink assembly. The sink top includes a sink bowl. The sink assembly includes at least one plumbing apparatus that is connectable to a fluid

source for dispensing the fluid and a storage container for storing the plumbing apparatus when the sink top is in the stowed position.

[00010] The sink assembly may include two plumbing apparatuses that consist of a faucet and a hose assembly. The sink assembly may also include a fluid inlet line that has a fitting, which is connectable to the plumbing apparatuses. A valve may be included that is coupled to the fitting on the fluid inlet line that is operable between a first state enabling fluid flow and a second state inhibiting fluid flow. The valve may be a quick connect coupling and stopper valve. At least a portion of the fluid inlet line may be located in the storage container.

[00011] The sink assembly may further include a door, and the sink top may be attached to the door. In one embodiment, the door may be attached to the mounting frame with a hinged connection that provides movement of the sink top from the stowed position to the operational position. The sink top may also have an opening, and the storage container may be mounted to the sink top beneath the opening.

[00012] In a further embodiment of the invention, a vehicle is provided that includes vehicle sidewalls, wherein at least one of the sidewalls has an aperture therethrough. The vehicle may include a water supply system and a mounting frame mounted about the aperture in the side wall. A door for covering the aperture may also be provided that is movable relative to the mounting frame. The vehicle may also include a sink top that is connected to the door that is movable through the aperture between a stowed position when not in use or when the vehicle is traveling and an operational position for use of the sink top. A plumbing apparatus may also be included that is connected to the water supply system for dispensing the water.

[00013] In one embodiment, the door lies substantially parallel with the sidewall that has the aperture when said sink top is in the stowed position, and the door is at an angle to the sidewall having the aperture when the sink top is in the operational position.

[00014] The sink top may also be located substantially on the exterior of the vehicle in the operational position and perpendicular to the sidewall having the aperture, and the sink top may be located within the vehicle in the stowed position at an inclined orientation.

[00015] The vehicle may further include a storage container for storing the plumbing apparatus when the sink top is in the stowed position. The sink top may include an opening, and the storage container may be mounted beneath the opening. A fluid inlet line may be included, and at least a portion of the fluid inlet line may be located in the storage container.

[00016] In yet another embodiment, a vehicle is provided that includes a water supply system and sidewalls, and at least one of the sidewalls has an aperture therethrough. The vehicle may include a mounting frame about the aperture and a sink top that is movable relative to the frame between a stowed position wherein the sink top is located within the vehicle when not in use or for travel and an operational position wherein the sink top is located substantially on the exterior of the vehicle. At least one plumbing apparatus may be provided that is connectable to the water supply system for dispensing the water. The vehicle may also include a storage container for storing the plumbing apparatus when the sink top is in the stowed position.

[00017] The sink top may have an opening therethrough, and the storage container may be mounted to the sink top beneath the opening. A fluid inlet line may also be included that is at least partially located within the storage container.

[00018] The vehicle may also include a door, wherein the door covers the aperture when the sink top is in the stowed position. The door may be movable relative to the sidewall having the aperture, and the sink top may be connected to the door.

BRIEF DESCRIPTION OF THE DRAWINGS

[00019] Figure 1 is a perspective view of a recreational vehicle having a swing out sink with the sink shown in a stowed position;

[00020] Figure 2 is a perspective view of the recreational vehicle of Figure 1 with the sink shown in an operational position;

[00021] Figure 3 is a rear perspective view of the sink in the operational position without any attachments and removed from the recreational vehicle for clarity;

[00022] Figure 4 is a view of the sink as shown in Figure 3 with a faucet attached and a hose assembly in a storage container;

[00023] Figure 5 is a view of the sink as shown in Figure 3 with the hose assembly attached;

[00024] Figure 6 is a side view of the swing out sink of Figure 3 shown in the stowed position;

[00025] Figure 7 is a side view of the swing out sink of Figure 3 shown in the operational position;

[00026] Figure 8 is a perspective view of the faucet attachment;

[00027] Figure 9 is a perspective view of the hose assembly attachment; and

[00028] Figure 10 is a cross-sectional view taken as shown in Figure 3 through the storage container.

[00029] Corresponding reference characters indicate corresponding parts throughout the several views. Although the drawings represent embodiments of the present invention, the drawings are not necessarily to scale and certain features may be exaggerated in order to better illustrate and explain the present invention. The exemplification set out herein illustrates an embodiment of the invention, in one form, and such exemplifications are not to be construed as limiting the scope of the invention in any manner.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[00030] For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiments illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended. The invention includes any alterations and further modifications in the illustrated devices and described methods and further applications of the principles of the invention which would normally occur to one skilled in the art to which the invention relates.

[00031] With reference first to Figures 1 and 2, the invention relates to a stowable sink assembly generally indicated as 10 that is designed for use on the exterior of a recreational vehicle generally indicated as 12. Recreational vehicle 12 includes a side wall 14 having an aperture 16 (Figure 2), where sink assembly 10 is mounted.

[00032] Referring now to Figures 3-10, sink assembly 10 includes a mounting frame generally indicated as 20, a door 22, a sink top generally indicated as 24, a storage container generally indicated as 26, a faucet/plumbing apparatus generally indicated as 28, and a hose assembly/plumbing apparatus generally indicated as 29.

[00033] In the embodiment shown, mounting frame 20 has a generally rectangular configuration having a central opening 30 (Figures 3-5). Frame 20 includes an outwardly extending mounting flange 32, a central portion 34 and an inwardly extending sealing flange 36 (Figure 10). Mounting flange 32 includes apertures 38 for mounting sink assembly 10 to recreational vehicle 12.

[00034] Door 22 includes an outer surface 40, an inner surface 42, an upper end 43, and a lower end 44. Door 22 also includes a locking latch 46 located at upper end 43 for locking the door in a stowed position as shown in Figures 1 and 6. Door 22 also includes a hinged connection 48 at lower end 44 to attach the door to and allow pivotal movement relative to mounting frame 20.

[00035] Sink top 24 includes a working surface 50, a sink bowl 51 extending down from the working surface, a back stop 52 extending substantially perpendicular upward from working surface 50, a frontal extension 53 extending downwardly and rearwardly from the front of working surface 50, and an opening 54 (Figures 3 and 10). Sink bowl 51 contains a drain opening 55 at the bottom thereof and a fluid outlet line 56, which is connected to a drain or gray tank (not shown) for discarding used fluid. Sink top 24 also includes a circumferential flange 57 extending downwardly from working surface 50 about opening 54.

[00036] A fluid control valve assembly 60 is also attached to sink top 24 upon working surface 50. Fluid control valve assembly 60 includes a pair of fluid control knobs 62a, 62b for controlling fluid flow to faucet 28 or hose assembly 29, whichever may be attached. Fluid control knobs 62a, 62b are connected to separate fluid inlet lines 64a, 64b, respectively, which may be coupled to different fluid sources such as a cold water supply tank and a hot water supply tank (not shown) contained in recreational vehicle 12.

[00037] Storage container 26 has a generally cylindrical configuration in the embodiment shown including a bottom wall 70 and a side wall 71 as best shown in Figure 10. The top of storage container 26 is open; however, a cover or lid (not shown) maybe provided. Storage container 26 also contains an aperture 72 in bottom wall 70 through

which a fluid inlet line 73 is inserted and extends longitudinally upward through the center of storage container 26. Fluid inlet line 73 has an inlet fitting 74 at one end located below bottom wall 70 of supply container 26 and an outlet fitting 75 at an opposite end thereof. A valve 76 can be attached to the outlet fitting 75 to control fluid flow through the system. In one embodiment, the valve 76 is a quick connect coupling and stopper valve; however, any of various fluid control valves well known in the art can also be employed. In the preferred version, fluid inlet line 73 is a PVC-type tube, but it should be appreciated that any type of suitable tubing may be used. A supply line 77 is connected between inlet fitting 74 on the fluid inlet line and the fluid control valve assembly 60.

[00038] With reference now to Figures 8 and 9, faucet 28 and hose assembly 29 are shown in greater detail. In the embodiment of Figure 8, faucet 28 includes a nozzle 80 for dispensing fluid and a male quick connect coupling 82 for connecting to valve 76, which in the embodiment shown has a female quick connect coupling. Hose assembly 29 includes a hose 84 with a male quick connect coupling 86 in the embodiment shown that is also connectable to the female quick connect coupling of valve 76. Hose assembly 29 also includes a flow controlling nozzle 88 at the other end of hose 84 opposite of quick connect coupling 86. Hose assembly 29 is shown pre-coiled as an illustration of an embodiment that is well suited for storage in storage container 26; however, there is no intent to limit the invention to such a pre-coiled hose. Furthermore, other features of faucet 28 and hose assembly 29 including the nozzle and couplings are shown for the purpose of illustration only and not intended to limit the invention.

[00039] It should be appreciated as mentioned above, that when assembled, sink assembly 10 may be mounted through the side wall of a recreational vehicle. The unit may be mounted through an opening in the side wall, with fasteners (not shown) such as bolts or screws to hold the assembly in place. With reference to Figures 1 and 2, the sink assembly is shown mounted to side wall 14 of recreational vehicle 12 through aperture 16. It should be appreciated that aperture 16 is cut through side wall 14 such that it is wider than sink top 24, but smaller than the profile of mounting flange 32. Fasteners (not shown) are inserted through holes 38 in mounting flange 32 to retain sink assembly 10 in place in sidewall 14. It should also be appreciated that fluid inlet lines 64a, 64b are connected to the plumbing system (not shown) of the vehicle through corresponding fittings (not shown) to supply fluid pressure to fluid control valve assembly 60. As

discussed above, fluid inlet lines 64a, 64b may be connected to respective hot and cold water tanks, or may be connected to shore water supply lines (not shown).

[00040] Also, as discussed above, door 22 is connected to mounting frame 20 with hinged connection 48 so that the door may be swung down and pivot about its lower end 44. In the embodiment shown for illustrative purposes only, sink 24 is attached to door 22 by using an adhesive or fasteners (not shown) to mount frontal extension 53 of sink top 24 to the door (Figure 10). Storage container 26 is mounted to circumferential flange 57 of sink top 24 using an adhesive or fasteners (not shown) so that it is accessible through opening 54 in the sink top. It should also be appreciated that faucet 28 and hose assembly 29 may be stored in storage container 26 when the sink assembly is in the stowed position as shown in Figures 1 and 6.

[00041] In operation, sink assembly 10 may be moved between the stowed position as shown in Figures 1 and 6, wherein door 22 is substantially parallel to sidewall 14 to an operational position as shown in Figures 2-5, 7, and 10, wherein the door is swung down about hinged connection 48 so that it is at an angle to sidewall 14. In the stowed position, sink top 24 is contained within recreational vehicle 12 at an inclined orientation and may be locked in position with locking latch 46, which may be rotated to catch upon sealing flange 36 of frame 20. It should be appreciated that a sealing member (not shown) such as a foam strip or other resilient member may be attached to the periphery of either one or both inner surface 42 of door 22 or the exterior side of sealing flange 36 to provide a sealing engagement between the door and sealing flange when the assembly is in the stowed and locked position.

[00042] When it is desired to use sink assembly 10, locking latch 46 may be rotated so that it no longer engages sealing flange 36, and door 22 swung down to the operational position. In the embodiment shown, for illustration purposes only, sink top 24 is stopped in the operational position by backstop 52 contacting the back of sealing flange 36. The weight of the assembly will maintain it in the operational position; however, it should be appreciated, that the backstop may be secured to the sealing flange during use by using magnetic strips (not shown), snap locks (not shown) or other known mechanisms for providing a releasable engagement.

[00043] When the sink assembly 10 is in the operational position, a plumbing apparatus, either faucet 28 or hose assembly 29, is selected for use, and the respective

quick connect coupling 82 or 86 is attached to the quick connect coupling on valve 76. The remaining apparatus can continue to be stored in the storage container 26 while the other is being used. When either one or both of fluid control knobs 62a, 62b are activated, water can be dispensed from the attached plumbing apparatus. Sink bowl 51 provides a catch for dispensed water, which will be discarded through drain 55 and fluid outlet line 56. It should also be appreciated that valve 76 on outlet fitting 75 precludes accidental fluid flow in the event fluid control knobs 62a or 62b are activated before a plumbing apparatus is attached to the quick connect coupling. Accordingly, sink assembly 10 provides an easy, convenient access to water and a sink from the exterior of the recreational vehicle 12.

[00044] While the invention has been taught with specific reference to the above embodiment, one skilled in the art will recognize that changes can be made in form and detailed without departing from the spirit and scope of the invention. For example, although sink assembly 10 swings out from the stowed position to the operational position in the above embodiment, it would also be possible to have the sink top mounted on a slide out mechanism. In addition, the sink top could be mounted with a hinged connection directly to the frame as opposed to mounting it to door 22, which is mounted with the hinged connection.

[00045] Sink assembly 10 may also be stopped at the operational position with mechanisms other than backstop 52. For example, a cables, chains, or pivoting and/or folding arms may be attached between door 22 and frame 20, or an arcuate arm with a stop at one end may be used to secure the sink assembly in the operational position. Other known latches or locks may also be used to secure the sink assembly in the stowed position.

[00046] Also, although the sink assembly has been shown on a type of recreational vehicle that is commonly referred to as a motor home, it may also be used on any other known type of recreational vehicles such as trailers, fifth wheels, or pop up campers. The invention may also be used on other types of vehicles such as boats or railroad cars or may be mounted on prefabricated homes. As such, the described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the following claims rather than by the description.